

REMARKS

This responds to the Office Action mailed on May 30, 2006.

No claims are amended, canceled or added. Claims 1-30 remain pending in this application.

§103 Rejection of the Claims

Claims 1, 2, 4, 8-12, 14-18 and 20-27 were rejected under 35 USC § 103(a) as being unpatentable over Horiuchi (U.S. 6,084,295). Applicant respectfully traverses the rejection and requests the Office to consider the following.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (M.P.E.P. § 2143 8th Ed, Rev.4).

The Office Action admits that “Horiuchi does not specifically disclose an upper protective layer where the first and second wire bond pads and the upper protective layer are disposed upon each other [claim 1].” (Office Action at page 3). The Office Action next uses reference to Fig. 2 to assert that claim 1 is obvious. Applicant respectfully disagrees. “FIG. 2 is an enlarged side section view” (Horiuchi col. 3, lines 3-4), which shows a structure nothing like that set forth in claim 1. In Figure 2 of Horiuchi, there is no hint or suggestion of a

first wire-bond pad disposed *upon* the upper protective layer ... a first via in the wire-bonding mounting substrate ... wherein the first via is disposed *symmetrically and directly below* the first wire-bond pad

(Claim 1, emphases added). Consequently, when one looks to Figure 2 of Horiuchi to fill in the admitted deficits elsewhere in Horiuchi, one is led further away from what is claimed in claim 1. Because all the claims limitations are not taught in Horiuchi, withdrawal of the rejections is respectfully requested. Further, because the highlighted teaching by Horiuchi, teaches away from what is claimed, the Office has impermissibly used Applicant's disclosure as a guide to reach a conclusion of obviousness. Withdrawal of the rejections is respectfully requested. Claims 2-7 depend from claim 1 and are therefore also not obvious over Horiuchi. Withdrawal of the rejections is respectfully requested.

Independent claim 8 also has the limitations of

first wire-bond pad disposed *upon* the upper protective layer ... a
first via in the wire-bonding mounting substrate ... wherein the
first via is disposed *symmetrically and directly below* the first wire-
bond pad

which Horiuchi does not teach and further, teaches away from. Withdrawal of the rejections is respectfully requested. Claims 9-16 depend from claim 8 and are therefore also not obvious over Horiuchi. Withdrawal of the rejections is respectfully requested.

Independent claim 17, from which rejected claims 20-23 depend, has the limitation as a process claim of "wherein forming proceeds from the lower protective layer toward the upper protective layer". The Office Action asserts Horiuchi teaches this. (Office Action at page 7). Applicant respectfully disagrees. Horiuchi is silent about forming a via, starting at the lower protective layer, *i.e.*, "proceeds from the lower protective layer" (Claim 17) and the via forms from this layer and continues in the direction of the upper protective layer, *i.e.*, "toward the upper protective layer" (Id). This process limitation has support in the specification, *e.g.*, "In other words, forming the via is done by laser drilling that forming proceeds from the second surface 114 toward the first surface 112." Horiuchi neither teaches nor suggests this limitation. Consequently, all the limitations of the rejected claims are not taught by the cited reference. Withdrawal of the rejections is respectfully requested.

Claims 3, 5-7 and 9 were also rejected under 35 USC § 103(a) as being unpatentable over Horiuchi in view of Hashemi (U.S. 6,252,178 B1). Applicant respectfully traverses the rejection and requests the Office to consider the following.

The Office Action states that “the modified invention of Horiuchi teaches the claimed invention as described above except ... wherein the via includes a liner [claims 3, 19], further including; an interconnect filling the via [claim 5].” As stated above, the structure of claim 1, from which claims 3 and 5-7 depend includes the limitations of

first wire-bond pad disposed *upon* the upper protective layer ... a
first via in the wire-bonding mounting substrate ... wherein the
first via is disposed *symmetrically and directly below* the first wire-
bond pad

which Horiuchi does not teach and further, teaches away from. Hashemi does nothing to fill the voids and negative teachings left by Horiuchi. Because the combination of Horiuchi with Hashemi does not teach and further, teaches away from what is claimed, withdrawal of the rejections is respectfully requested. Further, Hashemi teaches no occurrence of a via in the mounting substrate. Hashemi’s core layer 200 has no vias. Consequently, the combination of Horiuchi with Hashemi can only be reached by using Applicant’s disclosure as a guide.

The Office Action first refers to claim 9 as being rejected (Office Action at page 7, beginning of second paragraph), but next refers to claim 19. (Office Action at page 7, beginning of third paragraph). Applicant believes claim 19 is referred to as it is referenced again at the beginning of page 8. Claim 19 is a process claim, which depends from claim 17. Horiuchi is silent about forming a via, starting at the lower protective layer, *i.e.*, “proceeds from the lower protective layer” (Claim 17) and the via forms from this layer and continues in the direction of the upper protective layer, *i.e.*, “toward the upper protective layer” (Id). Horiuchi neither teaches nor suggests this limitation, and Hashemi has no vias in the core 200, which makes the combination of Horiuchi and Hashemi untenable to teach the limitations of claim 19. Consequently, all the limitations of the rejected claims are not taught by the cited reference. Withdrawal of the rejections is respectfully requested.

Claim 13 was also rejected under 35 USC § 103(a) as being unpatentable over Horiuchi and further in view of Walton (U.S. 5,936,844). Applicant respectfully traverses the rejection and requests the Office to consider the following.

The Office Action states that “the modified invention of Horiuchi teaches the claimed invention as described above except ... a larger substrate coupled to the first bump [claim 13].” As stated above, the structure of claim 8, from which claim 13 depends includes the limitations of

first wire-bond pad disposed *upon* the upper protective layer ... a first via in the wire-bonding mounting substrate ... wherein the first via is disposed *symmetrically and directly below* the first wire-bond pad

which Horiuchi does not teach and further, teaches away from. Walton does nothing to fill the voids and negative teachings left by Horiuchi. Because the combination of Horiuchi with Walton does not teach and further, teaches away from what is claimed, withdrawal of the rejections is respectfully requested. Further, Walton teaches no occurrence of a via in the mounting substrate. Walton’s PCB has no through vias. Consequently, the combination of Horiuchi with Walton can only be reached by using Applicant’s disclosure as a guide. Withdrawal of the rejections is respectfully requested.

Claims 28-30 were also rejected under 35 USC § 103(a) as being unpatentable over Walton in view of Horiuchi. Applicant respectfully traverses the rejection and requests the Office to consider the following.

The Office Action admits that Walton does not include the structural limitations of claim 28. Applicant incorporates here by reference, the previous admissions by the Office of Horiuchi. In particular, “Horiuchi does not specifically disclose an upper protective layer where the first and second wire bond pads and the upper protective layer are disposed upon each other [claim 1].” (Office Action at page 3). The Office Action uses reference to Fig. 2 (Office Action at page 10) to assert that claim 28 is obvious. Applicant respectfully disagrees. “FIG. 2 is an enlarged side section view” (Horiuchi col. 3, lines 3-4), which shows a structure nothing like that set forth in claim 28. In Figure 2 of Horiuchi, there is no hint or suggestion of a

first wire-bond pad disposed *upon* the upper protective layer ... a first via in the wire-bonding mounting substrate ... wherein the first via is disposed *symmetrically and directly below* the first wire-bond pad


(Claim 28, emphases added). Consequently, when one looks to Figure 2 of Horiuchi to fill in the admitted deficits elsewhere in Horiuchi, one is led further away from what is claimed in claim 28. Because all the claims limitations are not taught in Horiuchi, withdrawal of the rejections is respectfully requested. Further, because the highlighted teaching by Horiuchi, teaches away from what is claimed, the Office has impermissibly used Applicant's disclosure as a guide to reach a conclusion of obviousness. Withdrawal of the rejections is respectfully requested. Claims 29-30 depend from claim 28 and are therefore also not obvious over Walton in view of Horiuchi. Withdrawal of the rejections is respectfully requested.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (801) 278-9171 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,
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